Goddard Procedures and Guidelines

DIRECTIVE NO. GPG 1710.1
EFFECTIVE DATE:
EXPIRATION DATE:

APPROVED BY Signature:
NAME: A. V. Diaz
TITLE: Director

Responsible Office: 300/Office of Systems Safety and Mission Assurance

Title: CORRECTIVE AND PREVENTIVE ACTION

Preface

P1. PURPOSE

This procedure establishes the procedure for initiating and implementing corrective and preventive actions.

P2. APPLICABILITY

This procedure applies to all GSFC products and processes covered by the scope of the GSFC Quality Management System (see GPD 1270.3).

P3. AUTHORITY

GPD 1270.3, GSFC Quality Management System (QMS)

P4. REFERENCES

a. GPG 1060.1, Management Responsibility

b. GPG 5100.2, Supplier Performance Records

c. GPG 5340.2, Control of Nonconforming Product

d. GPG 5340.3, Preparation and Handling of Alerts and Safe Alerts

e. GPG 9980.1, Internal Audit System

P5. CANCELLATION

None

Procedure

1. DEFINITIONS

a. Product Design Lead (PDL) - The manager or leader with overall responsibility for managing the design activity, managing the technical and organizational interfaces identified during design planning, and where required, forming and leading the Product Design Team (PDT). The term refers to flight project managers,

mission managers, instrument managers, subsystem technical managers, integrated product development team leaders, lead engineers, etc.

b. Material Review Board (MRB) – Individual(s), identified in applicable product management plans (see GPG 1270.4), authorized to evaluate and disposition nonconforming product and determine corrective action.

c. Corrective Action – Action taken, including remedial action, to eliminate the causes of an existing nonconformity, defect, or other undesirable situation in order to prevent recurrence.

d. Remedial Action – Identification and correction of previously accepted or current product affected by, but not immediately associated with, an identified nonconformance.

e. Preventive Action - Action taken to eliminate the causes of a potential nonconformity, defect, or other undesirable situation in order to prevent occurrence.

2. IMPLEMENTATION

Corrective Action

2.1 Corrective action shall be determined and implemented for nonconformances, identified on the GSFC Nonconformance Report (NCR) form (Attachment) in accordance with GPG 5340.2, which meet one or more of the following criteria:

a. The nonconformance was discovered as a result of an internal or supplier audit;

b. The nonconformance was identified via a customer complaint;

c. The nonconformance affects the safety of the mission or personnel;

d. The nonconformance is known or suspected to have occurred previously on the same or similar product;

e. The nonconformance, if undetected, would have posed a significant risk to mission success in terms of performance, resources, or schedule;

The corrective action shall clearly define the actions to be taken, action responsibility, when actions are to be initiated and a schedule for completion and follow-up verification of corrective action.

Regardless of product disposition, NCR's generated as a result of incoming inspection and test shall, as a minimum, be provided through the GSFC Contracting Officer to the applicable supplier for the supplier's information. If the nonconformance in such cases meets one or more of the criteria above, the applicable GSFC MRB or Lead Auditor shall request (through the GSFC Contracting Officer) the supplier to provide documented corrective action to GSFC. Supplier-oriented NCR's and corrective action responses shall be considered during supplier performance evaluation in accordance with GPG 5100.2.

2.1.1 For NCR's documenting product nonconformances, corrective action shall be determined, documented and approved on the NCR by the applicable MRB. Corrective action for customer complaints received after dissolution of a Project, shall be determined, documented and approved on the NCR by the responsible Directorate Office.

Determination of remedial action shall include consideration of preparation of an Alert/Safe Alert, in accordance with GPG 5340.3, when applicable to the nonconformance.

2.1.2 For NCR's generated as a result of an audit, the audit report addressee shall determine, document and approve corrective action on the NCR'(s).

2.1.3 Verification of corrective action implementation and effectiveness shall be performed by the corrective action approval authority (block 14 of the NCR form). The need for and performance of independent follow-up corrective action verification of audit NCR's shall be determined by the Lead Auditor in accordance with GPG 9980.1.

2.1.4 An NCR which requires corrective action is considered closed when corrective action has been verified as being implemented and effective.

2.2 Preventive Action

2.2.1 The Quality Management System Council (QMSC) shall retrieve appropriate data from NCR files for analysis to determine the extent of systematic problems, trends, and patterns in nonconformances and corrective actions.

2.2.2 Results of the analysis of NCR data, and associated preventive action recommendations, shall be presented at Center management reviews of the QMS in accordance with GPG 1060.1.

2.2.3 The Center Director shall determine what, if any, action item(s) for preventive action shall be initiated. This action, including responsibilities and schedules, shall be recorded as part of the Management Review (see GPG 1060.1).

2.2.4 Unless otherwise indicated by the action item, preliminary results of the action item shall be submitted to the QMSC for review and follow-up verification of effectiveness. The QMSC shall prepare the final action item response and submit it to the Center Director for approval.

3. RECORDS

a. Nonconformance Reports (NCR's)

b. NCR Data Analysis

c. Preventive Action Action Items

GSFC NONCONFORMANCE REPORT

[1] NCR #

IDENTIFICATION AND DISPOSITION

[2] Found by:
- ☐ a. Internal Audit
- ☐ b. Supplier Audit (enter supplier in 5a)
- ☐ c. Customer Complaint
- ☐ d. Incoming Inspection/Test (enter supplier in 5a)
- ☐ e. In-process/Final Inspection/Test (non-operational)
- ☐ f. Pre-Launch/Pre-Flight Operation
- ☐ g. Mission Operation
- ☐ h. CA follow-up

[3] Initiator/Code/Date

[4] Reference(s)
- ☐ WOA #:
- ☐ WOA Event #:
- ☐ Audit ID #:

[5] Responsible Project/Organization

[5a] Supplier

[6] Item Description

[7a] Item Type
- ☐ 1. Document (complete 7d)
- ☐ 2. Material (complete 7b)
- ☐ 3. EEE Part (complete 7b, 7c)
- ☐ 4. Mechanical Part (complete 7b, 7c, 7d)
- ☐ 5. Subass'y/Ass'y (complete 7c, 7d)
- ☐ 6. Component (complete 7c, 7d)
- ☐ 7. Subsystem/System (complete 7c, 7d)
- ☐ 8. Software (complete 7d)
- ☐ 9. QMS Element (complete 7e)

[7b] Lot/Heat #

[7c] Serial # (when applicable)

[7d] Item Configuration #/Rev.

[7e] System Element

[8] Description of Nonconformance

[8a] Defect Code:

[9] Product Disposition (not applicable to Item Type 7a(9))
☐ Rework ☐ Repair ☐ Scrap ☐ Return to Vendor
☐ Use-As-Is ☐ Reclassify
Customer Approval Required? ☐ Yes ☐ No
Additional Disposition Instructions:

[10a] Disposition Approval/Code

[11] Date

[10b] Customer Approval on file? ☐ Yes ☐ No

CORRECTIVE ACTION

[12] The nonconformance:
- ☐ was identified as a result of internal or supplier audit
- ☐ was identified as a result of customer complaint
- ☐ affects mission or personnel safety
- ☐ is known or suspected to have occurred previously on same or similar product
- ☐ would have posed a significant risk to mission success (performance, schedule, resources) if undetected.

Complete Corrective Action if one or more blocks above are checked

[13] Root Cause:

[13a] Cause Code:

Action Taken to Correct Cause:

Remedial Action:

[14a] CA Initiation Date	[14b] CA Completion Date	[14c] CA Follow-up Date	[15] CA Approval/Code/Date

[16] CA Follow-up

CA Implemented and Effective? ☐ Yes ☐ No _____ _____

Name/Code Date

If "NO", new NCR # _____

GSFC Form _____

Attachment

Form Instructions

1. NCR #
   For product nonconformances: The corresponding WOA# plus a sequentially assigned numeric NCR serial number (e.g., HST5/9/97-1). For NCR's generated as a result of audit,: The report number plus a sequentially assigned numeric NCR serial number. For Customer Complaints: A Directorate/Project assigned unique number.
2. Check one box
3. First and last name of NCR Initiator, his/her org. code number and initiation date
4. Check applicable box and identify WOA and WOA Event number, or Report (e.g. Audit report) number
5. Identify Project or organization whose product or implementation is nonconforming

5a. Identify supplier providing product or being audited

6. Name of discrepant product or system element

7a Check one box

7b Identify material/part lot/heat number

7c Identify item serial number whenever applicable

7d Identify item configuration. Number (e.g., drawing number)

7e Identify nonconforming quality system element (e.g., Process Control, Training)

8. Describe/reference requirement vs. actual condition

8a. Identify defect code from below

9. Check one disposition and identify if customer disposition approval is required. Define additional instructions as necessary.

10a. Authorized MRB signature and Code

10b. Indicate yes or no

11. Date of MRB signature
12. Check all that apply. If none apply, NCR is closed.
13. Identify all elements of corrective action: Root Cause, Action taken to Correct Cause, and Remedial Action

13a Identify cause code from below

14a. Indicate when corrective actions will be initiated

14b. Indicate when corrective actions will be complete

14c. Indicate when corrective action implementation and effectiveness, after completion, will be evaluated

15. Authorized signature (MRB, Audit Lead, etc.) and Org. number approving corrective action and schedule
16. Check one block. A checked "NO" block requires generation of a new NCR (NCR # = Original # - FU).
    For example HST5/9/97-1-FU

DEFECT CODES

000	Conformal Coating	160	Thermal Cycle Test
010	Contamination	170	Vibration Test
020	Damage	180	Thermal-Vacuum Test
030	Dimensional	190	Welding/Welds
040	Documentation	200	Wiring
050	Electronic/Electrical	210	Continuity/Ground
060	Finish	220	Software Code
070	Identification	230	Quality System Element
080	Material	240	Mission Operation
090	Mechanical	250	No Product/System Defect. NCR Initiated in error
100	Soldering		
110	Acoustic Test		
120	EMI/EMC Test		
130	Leak Test		
140	Performance Test		
150	Shock Test		

CAUSE CODES

000	Design Deficiency
010	Procedure not available
020	Procedure not implemented
030	Procedure inadequate
040	Inadequate training/certification
050	Equipment malfunction
060	Cause Unknown (After investigation/troubleshooting)

Continuation of Block 13 from front

Root Cause:

Action Taken to Correct Cause:

Remedial Action:

GSFC Form _____

Attachment (Reverse)

Corrective and Preventive Action Flowchart

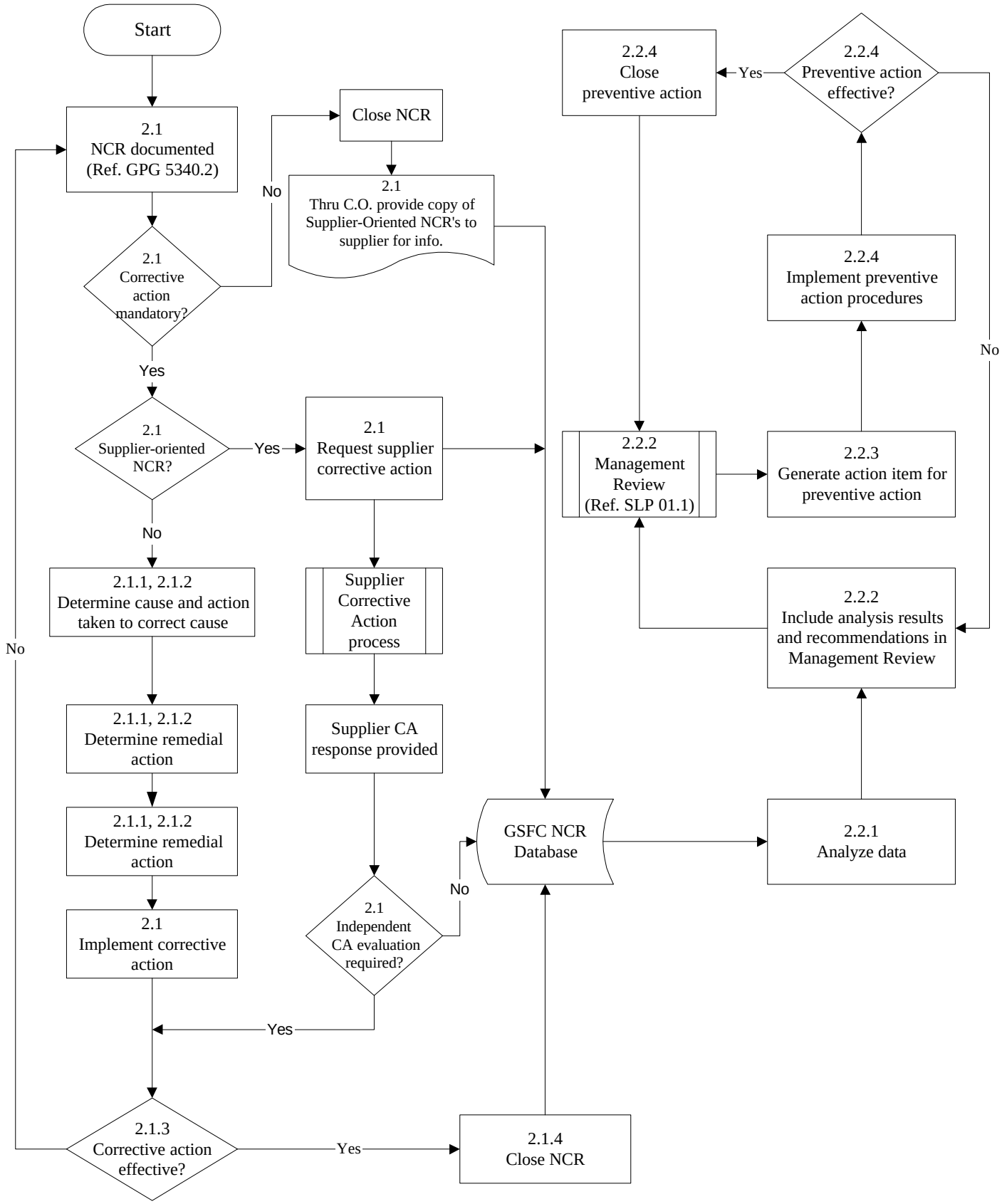

Figure 1